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#include <stdio.h>

#define MAX_RULES 18
#define MAX_PROD_LEN 3
#define STACK_SIZE 5

char arr[MAX_RULES][MAX_PROD_LEN] = {
   {'E', '+', 'F'}, {'E', '*', 'F'}, {'E', '(', 'F'}, {'E', ')', 'F'}, {'E', 'i', 'F'},
   {'E', '$', 'F'}, {'F', '+', 'F'}, {'F', '*', 'F'}, {'F', '(', 'F'}, {'F', ')', 'F'},
   {'F', 'i', 'F'}, {'F', '$', 'F'}, {'T', '+', 'F'}, {'T', '*', 'F'}, {'T', '(', 'F'},
   {'T', ')', 'F'}, {'T', 'i', 'F'}, {'T', '$', 'F'}
};

char prod[7] = "EETTFF"; // increased size to include the null terminator

char res[6][MAX_PROD_LEN] = {
   {'E', '+', 'T'}, {'T', '\0', '\0'}, {'T', '*', 'F'}, {'F', '\0', '\0'}, {'(', 'E', ')'}, {'i', '\0', '\0'}
};

char stack[STACK_SIZE][2];
int top = -1;

void install(char pro, char re) {
   int i;
   for (i = 0; i < MAX_RULES; ++i) {
      if (arr[i][0] == pro && arr[i][1] == re) {
         arr[i][2] = 'T';
      }
   }
   ++top;
   stack[top][0] = pro;
```

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    stack[top][1] = re;
}

int main() {
    int i, j;
    char pro, re, pri = ' ';

    for (i = 0; i < 6; ++i) {
        for (j = 2; j >= 0; --j) {
            if (res[i][j] == '+' || res[i][j] == '*' || res[i][j] == '(' || res[i][j] == ')' || res[i][j] == 'i' || res[i][j] ==
'$') {
                install(prod[i], res[i][j]);
                break;
            } else if (res[i][j] == 'E' || res[i][j] == 'F' || res[i][j] == 'T') {
                if (j > 0 && (res[i][j - 1] == '+' || res[i][j - 1] == '*' || res[i][j - 1] == '(' || res[i][j - 1] == ')' ||
res[i][j - 1] == 'i' || res[i][j - 1] == '$')) {
                    install(prod[i], res[i][j - 1]);
                    break;
                }
            }
        }
    }

    while (top >= 0) {
        pro = stack[top][0];
        re = stack[top][1];
        --top;
        for (i = 0; i < 6; ++i) {
            for (j = 2; j >= 0; --j) {
                if (res[i][0] == pro && res[i][0] != prod[i]) {
                    install(prod[i], re);
                    break;
```
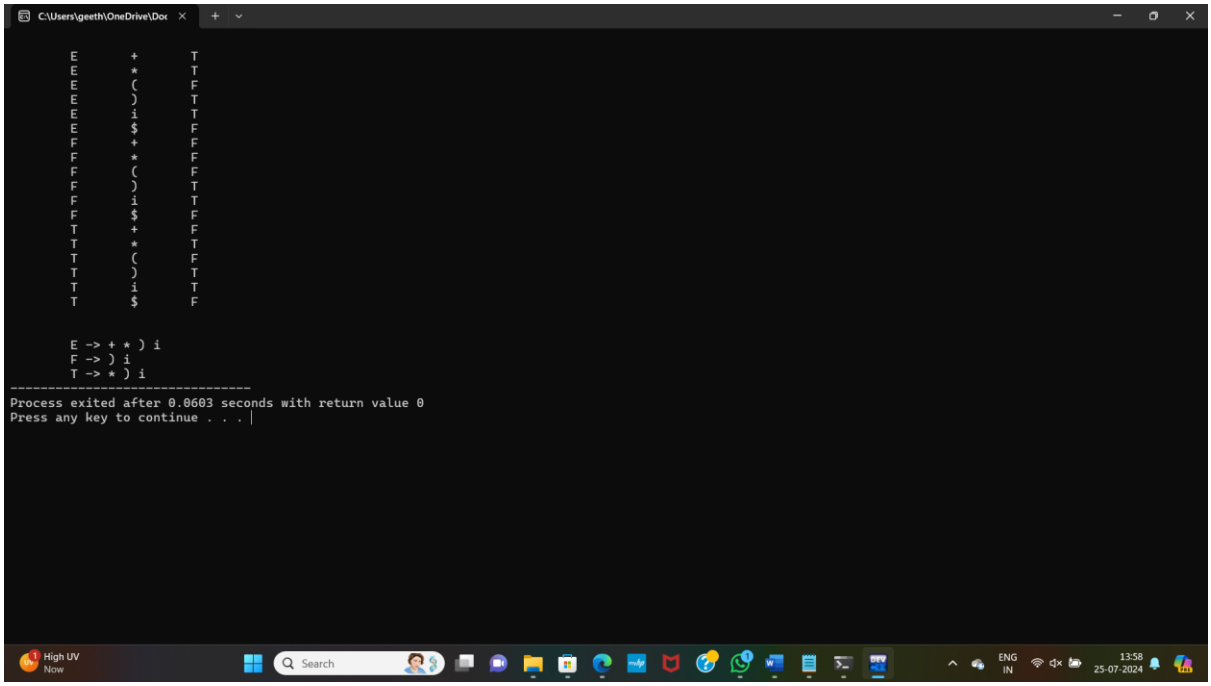

```
            } else if (res[i][0] != '\0') {
                break;
            }
        }
    }
}

for (i = 0; i < MAX_RULES; ++i) {
    printf("\n\t");
    for (j = 0; j < MAX_PROD_LEN; ++j)
        printf("%c\t", arr[i][j]);
}

printf("\n\n");

for (i = 0; i < MAX_RULES; ++i) {
    if (pri != arr[i][0]) {
        pri = arr[i][0];
        printf("\n\t%c -> ", pri);
    }
    if (arr[i][2] == 'T')
        printf("%c ", arr[i][1]);
}

return 0;
```

}


C:\Users\geeth\OneDrive\Doc
E + T
E * T
E (F
E) T
E i T
E $ F
F + F
F * F
F (F
F) T
F i T
F $ F
T + F
T * T
T (F
T) T
T i T
T $ F
E -> + *) i
F ->) i
T -> *) i
Process exited after 0.0603 seconds with return value 0
Press any key to continue . . .
High UV
Now
Search
ENG
IN
13:58
25-07-2024